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Date 08/01/02 Serial # 09/328,646 Priority Application Date 06/09/99

Your Name HUNG VU Examiner # 75098

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Circle: USPT DWPI EPO Abs JPO Abs IBM TDB

Other: ______

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. ______

08-02-02 P03:11 OUT

What types of references would you like? Please checkmark:

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Secondary Refs ✓ Foreign Patents ✓

Teaching Refs ✓

What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

hydrogensilsesquioxanes having the formula $(HSiO_{1.5})_n$,

hydrogensiloxanes having the formula $[(HSiO_{1.5})_x O_y]_n$,

wherein x = about 6 to about 20

y = 1 to about 3

n = 1 to about 4,000.

Staff Use Only	Type of Search	Vendors
Searcher: ______	Structure (#) ______	STN ______
Searcher Phone: ______	Bibliographic ______	Dialog ______
Searcher Location: STIC-EIC2800, CP4-9C18	Litigation ______	Questel/Orbit ______
Date Searcher Picked Up: ______	Fulltext ______	Lexis-Nexis ______
Date Completed: ______	Patent Family ______	WWW/Internet ______
Searcher Prep/Rev Time: ______	Other ______	Other ______
Online Time: ______		

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     FILE 'REGISTRY' ENTERED AT 10:15:34 ON 06 AUG 2002
                E O1.5 H SI/MF
                E H O1.5 SI/MF
                E H O SI/MF
                E H O SI/ELF
                E H O1.5 SI/ELF
                E H O1.5 SI/MF
L1            0 S H O1.5 SI

     FILE 'HCAPLUS' ENTERED AT 10:17:37 ON 06 AUG 2002
L2           38 S HSIO1.5
L3         5630 S SILSESQUIOXANE
L4           10 S HYDROGENSILSESQUIOXANE
L5           10 S L4 NOT L2
L6         1590 S L3 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L7          470 S L6 AND SEMICONDUCTOR
L8          142 S L7 AND (INTERCONNECT? OR CONNECT?)
L9          139 S L7 AND (INTERCONNECT?)
L10       65621 S SILOXANES
L11       83489 S SILOXANE
L12         272 S HYDROSILOXANE
L13          37 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L14          37 S L13 NOT (L4 OR L2)
L15           2 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE)(3N)(FILM OR LAYER?
L16         123 S HYDROGENSILOXANE
L17           2 S L16 AND (INSULAT? OR DIELECTRIC? OR OXIDE)(3N)(FILM OR LAYER?
```

L15 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:466575 HCAPLUS
DN 125:88927
TI Semiconductive silicone rubber compositions with reduced variation of volume resistivity
IN Ushio, Yoshito; Nakamura, Akito
PA Dow Corning Toray Silicone, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08120176	A2	19960514	JP 1994-281194	19941020

AB The compns. comprise (A) 100 parts diorganopolysiloxanes having .gtoreq.2 Si-bonded alkenyl groups, (B) 2-30 parts carbon black, (C) 2-20 parts metal compd. elec. conductive whiskers, and (D) sufficient amt. of curing agents. Me3SiO-terminated di-Me siloxane-Me vinyl siloxane copolymer (di-Me siloxane-Me vinyl siloxane mol ratio 99.84:0.16) 100, fumed SiO2 30, OH-terminated di-Me siloxane 5, Ketjenblack EC 4, and Dentall WK 200 (Sn **oxide**- and Sb **oxide-coated** K titanate whisker) 10 parts were compounded to give a silicone rubber base, 100 parts of which were mixed with 1 part 2,5-dimethylbis(2,5-tert-butylperoxy)hexane, pressed at 170.degree. for 10 min, and heated at 200.degree. for 4 h to give 10 sheets showing av. vol. resistivity 4.2 .times. 105 .OMEGA.-cm and std. deviation of common logarithm of vol. resistivity 0.12.

L15 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2002 ACS
AN 1981:210373 HCAPLUS
DN 94:210373
TI Organosilicon insulating compound hardened by a polyaddition reaction
AU Nanysh'yan, S. R.; Severnyi, V. V.; Polees, A. B.; Ushanov, S. M.
CS USSR
SO Plast. Massy (1981), (3), 32
CODEN: PLMSAI; ISSN: 0554-2901
DT Journal
LA Russian
AB The title compd. (Kompound 159-167) contg. a low-mol.-wt. org. polysiloxane I (m = 2-3, n .apprxeq. 103), prepd. from .alpha.,w-dihydroxy(polydimethylsiloxane) and an appropriate vinyl-contg. organosilicon oligomer, and a crosslinking agent [(Me3SiO0.6)0.1(Me2SiO)0.5(MeHSiO)0.4]n (n = 10-12), prepd. by cohydrolysis of the appropriate organochlorosilanes, gave, in the presence of the Speier catalyst (1% H2PtCl6 in iso-PrOH) after 50 min curing at 50.degree. proceeding by a polyaddn. mechanism, an **insulating coating** useful in the semiconductor industry and having tensile strength 3.5 MPa, bulk resistivity (1-5) .times. 1014 .OMEGA.cm, dielec. loss tangent 0.001 (1 MHz), and dielec. strength 25 kV/mm, along with acceptable relaxation and elastic properties.

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L5   ANSWER 1 OF 10  HCAPLUS  COPYRIGHT 2002 ACS
AN   2002:327850  HCAPLUS
DN   136:349352
TI   Method for determining side wall oxidation of low-k materials in vias and
     trenches
IN   Dunne, Jude A.
PA   Honeywell International Inc., USA
SO   U.S., 9 pp.
     CODEN: USXXAM
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.         KIND  DATE           APPLICATION NO.  DATE
     ---------------    ----  --------       ---------------  --------
PI   US 6379870          B1   20020430       US 2000-614633   20000712
AB   The invention provides a process for monitoring the quality of via or
     trench formation in the prodn. of a semiconductor device.  More
     particularly, the invention pertains to a process for detecting side wall
     oxidn. of low dielec. const. materials during the formation of vias or
     trenches in dielecs.  At least 1 via and/or trench is cleaved and
     contacted with a solvent to remove partially oxidized portions of dielecs.
     on the side walls, enabling defects to be visually inspected.
RE.CNT  9      THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
               ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5   ANSWER 2 OF 10  HCAPLUS  COPYRIGHT 2002 ACS
AN   2002:241221  HCAPLUS
DN   136:271732
TI   Method for fabricating semiconductor device capable of reducing parasitic
     capacitance and semiconductor device thereby
IN   Kim, Jae-hak; Sin, Hong-jae; Han, Jae-hyun
PA   S. Korea
SO   U.S. Pat. Appl. Publ., 10 pp.
     CODEN: USXXCO
DT   Patent
LA   English
FAN.CNT 1
     PATENT NO.         KIND  DATE           APPLICATION NO.  DATE
     ---------------    ----  --------       ---------------  --------
PI   US 2002036352       A1   20020328       US 2001-919340   20010730
PRAI KR 2000-43961       A    20000729
AB   A semiconductor device capable of reducing parasitic capacitance and a
     method thereof are disclosed, the method including the steps of depositing
     sequentially an inorg. Si oxide layer and a low dielec. const. org. Si
     oxide layer on a substrate, forming a partial trench with a predetd. depth
     in the org. Si oxide layer by patterning, oxygenating an inner wall of the
     partial trench, and forming a trench by etching the partial trench with
     HF.

L5   ANSWER 3 OF 10  HCAPLUS  COPYRIGHT 2002 ACS
AN   2002:49710  HCAPLUS
DN   136:301239
TI   Experimental analysis of high-resolution soft x-ray microscopy
AU   Chao, Weilun; Anderson, Erik H.; Denbeaux, Gregory; Harteneck, Bruce D.;
     Pearson, Angelic L.; Olynick, Deirdre L.; Schneider, Gerd; Attwood, David
     T., Jr.
CS   Center for X-ray Optics, Lawrence Berkeley National Laboratory, CA, 94720,
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USA
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4499(X-Ray Micro- and Nano-Focusing: Applications and Techniques II), 134-141
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB The soft x-ray, full-field microscope XM-1 at Lawrence Berkeley National Lab.'s (LBNL) Advanced Light Source has already demonstrated its capability to resolve 25-nm features. This was accomplished using a micro zone plate (MZP) with an outer zone width of 25 nm. Limited by the aspect ratio of the resist used in the fabrication, the gold-plating thickness of that zone plate is around 40 nm. However, some applications, in particular, biol. imaging, prefer improved efficiency, which can be achieved by high-aspect-ratio zone plates. This was accomplished by using a bilayer-resist process in the zone plate fabrication. As the first attempt, a 40-nm-outer-zone-width MZP with a nickel-plating thickness of 150 nm (aspect ratio of 4:1) was successfully fabricated. Relative to the 25-nm MZP, this zone plate is ten times more efficient. Using this high-efficiency MZP, a line test pattern with half period of 30 nm is resolved by the microscope at photon energy of 500 eV. Furthermore, with a new multilayer mirror, the XM-1 can now perform imaging up to 1.8 keV. An image of a line test pattern with half period of 40 nm has a measured modulation of 90%. The image was taken at 1.77 keV with the high-efficiency MZP with an outer zone width of 35 nm and a nickel-plating thickness of 180 nm (aspect ratio of 5:1). XM-1 provides a gateway to high-resoln. imaging at high energy. The normalized frequency response, which is the ratio of the power d. of the soft x-ray image to that of the SEM image, is shown in this paper.
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:911596 HCAPLUS
DN 136:254472
TI Substrate cooling efficiency during cryogenic inductively coupled plasma polymer etching for diffractive optics on membranes
AU Olynick, Deirdre L.; Anderson, Erik H.; Harteneck, Bruce; Veklerov, Eugene
CS Lawrence Berkeley National Laboratory, Berkeley, CA, 94530, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2001), 19(6), 2896-2900
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
AB High-resoln. diffractive optics on membranes have been fabricated using a bilayer resist system consisting of **hydrogensilsesquioxane** as a neg. electron-beam imaging layer and hardbaked AZPN114 as the underlay. To minimize sidewall etching of the polymer, the AZPN114 layer was etched at -100.degree.C in a cryogenically cooled inductively coupled plasma etcher. Features fabricated on Si supported membrane wafers, where the areas of interest are sepd. from the platen by the wafer thickness, provide an addnl. challenge to the low-temp. dry etch process due to low cooling efficiency (and thus membrane heating). Using cooling theory and exptl. verification we look at membrane cooling efficiency for different hardware and membrane size combinations. Diffusive cooling in membranes less than 140 .mu.m wide dominates membrane cooling during the etch process. With these small membranes we have fabricated high efficiency

x-ray zone plates with linewidths as small as 30 nm and 6:1 aspect ratios.
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:888112 HCAPLUS
DN 136:355763
TI Characterization of poly(silsesquioxane) by thermal curing
AU Yang, Chang-Chung; Chen, Wen-Chang; Chen, Li-Mei; Wang, Chao-Jen
CS Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan
SO Proceedings of the National Science Council, Republic of China, Part A: Physical Science and Engineering (2001), 25(6), 339-343
CODEN: PNAEE2; ISSN: 0255-6588
PB National Science Council
DT Journal
LA English
AB The structures and properties of three poly(silsesquioxane) (POSS) films were studied, including hydrogen silsesquioxane (HSQ), Me silsesquioxane (MSQ), and hybrido-organo siloxane polymer (HOSP). The cage structures of the POSS films were transformed into network structures by means of thermal curing. The order of the ratios of network/cage transformation after thermal curing was HSQ > MSQ > HOSP. This was the same as the order of the refractive indexes of the studied POSS films because of the variation of the molar volume due to the network/cage ratio. The structural conversion of the MSQ film was studied at four different temps. of 200, 250, 300, and 350.degree.C under a time range of 0 to 60 min. The exptl. results show that the structural conversion could be explained based on two-stage zero order kinetics. The rate const. for the first stage was one or two orders of magnitude greater than that for the second stage. The activation energy and frequency factor of network/cage transformation were 0.38 eV and 1.21 .times. 102 s-1 for the first stage while those for the second stage were 0.14 eV and 8.8 .times. 10-3 s-1, resp. The smaller frequency factor of the second stage compared to that of the first stage probably occurred because the network structure of the second stage limited the structural transformation. These results suggest that the structure and properties of the POSS film depend strongly on the conditions of thermal curing.
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:596161 HCAPLUS
DN 129:224543
TI Formation of organic solvent-insoluble **hydrogensilsesquioxane** coating on semiconductor substrate
IN Bremmer, Jeffrey Nicholas; Liu, Youfan
PA Dow Corning Corp., USA
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10242137	A2	19980911	JP 1998-25938	19980206
	TW 419719	B	20010121	TW 1998-87101518	19980205
PRAI	US 1997-798405	A	19970207		

AB The insol. coating is formed on a semiconductor substrate by (a) applying

a compn. contg. org. solvent-sol. **hydrogensilsesquioxanes** and (b) heating at .ltoreq.375.degree. for enough time so that the coating is converted to an insol. coating whose content of H is more than .gtoreq.80% of the content of SiH in the precursors. The coating is for making smooth surface on the substrate and the stress in the coating is lowered without affecting of other characteristics, e.g., dielec. const., etc.

L5 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:253587 HCAPLUS
DN 126:245619
TI Formation of multilayer circuit by using silsesquioxane as interlayer electric insulator precursor
IN Yamaha, Takahisa; Inoe, Jushi
PA Yamaha Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036117	A2	19970207	JP 1995-201591	19950714
	JP 3149739	B2	20010326		
	US 5821162	A	19981013	US 1996-679738	19960712
PRAI	JP 1995-201591	A	19950714		

AB The circuit is manufd. by a process including following successive steps; (1) covering the 1st elec. insulator film on a substrate by the 1st circuit layer, (2) forming a planarizing **hydrogensilsesquioxane** film on the 1st circuit layer, (3) converting the silsesquioxane to a preceramic Si oxide film by heating in an inert gas, (4) covering the preceramic by the 2nd insulating layer so that not to reflect fine bumps, which are expected to be formed in following step, (5) converting the preceramic to ceramic by heating in an oxidn. atm., and (6) forming the 2nd circuit directly or through the 3rd elec. insulator film on the ceramic SiO_2 layer.

L5 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:253586 HCAPLUS
DN 126:245618
TI Formation of multilayer circuit by using silsesquioxane as interlayer electric insulator precursor
IN Inoe, Jushi; Yamaha, Takahisa
PA Yamaha Corp, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036116	A2	19970207	JP 1995-201590	19950714
	JP 3070450	B2	20000731		
	US 5750403	A	19980512	US 1996-678568	19960712
PRAI	JP 1995-201590	A	19950714		

AB The circuit is manufd. by a process including following successive steps; (1) covering the 1st elec. insulator film on a substrate by the 1st circuit layer, (2) forming a planarizing **hydrogensilsesquioxane** film on the 1st circuit layer, (3) converting the silsesquioxane to a preceramic Si oxide film by heating in an inert gas, (4) covering the

preceramic by the 2nd insulating layer, (5) converting the preceramic to ceramic by heating in an oxidn. atm., in which the 2nd insulator film prevents the preceramic from generating fine bumps, and (6) forming the 2nd circuit directly on the ceramic SiO_2 layer.

L5 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:472640 HCAPLUS
DN 117:72640
TI Use of metal salts in manufacture of oligomeric **hydrogensilsesquioxanes** by hydrolysis/condensation reactions
IN Agaskar, Pradyot
PA USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5106604	A	19920421	US 1991-668032	19910312
	WO 9216458	A1	19921001	WO 1992-US2104	19920312
	W: AU, BB, BR, CA, FI, HU, JP, KP, KR, LK, MG, MW, NO, RO, RU, SD				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
	AU 9216789	A1	19921021	AU 1992-16789	19920312
	US 5593727	A	19970114	US 1993-148391	19931108
PRAI	US 1991-668032		19910312		
	WO 1992-US2104		19920312		
	US 1992-871389		19920421		

AB The process comprises prepg. a reaction medium having a 1st solvent phase and a 2nd solvent phase consisting of a concd. metal salt (e.g., $FeCl_3$) soln. in a polar org. solvent and water, adding $HSiX_3$ (X is a solvent-hydrolyzable group) to the 2-phase reaction medium, sepg. the 1st solvent phase from the 2nd solvent, treating the sepd. 1st solvent with a metal salt contg. CO_3^{2-} to remove byproducts, isolating a mixt. of crystals of $(HSiO_{3/2})_8$ and $(HSiO_{3/2})_{10}$ by slow evapn. of the 1st solvent, and washing the mixt. with a hydrocarbon solvent to isolate crystals of $(HSiO_{3/2})_8$.

L5 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2002 ACS
AN 1970:405563 HCAPLUS
DN 73:5563
TI **Hydrogensilsesquioxanes**
IN Collins, Warde Thomas; Frye, Cecil L.
PA Dow Corning Corp.
SO Ger. Offen., 14 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 1955511	B2	19730201	DE 1969-1955511	19691104
	DE 1955511	C3	19730830		
	US 3615272	A	19711026	US 1968-773314	19681104
	GB 1245483	A	19710908	GB 1969-1245483	19691006
	FR 2022525	A5	19700731	FR 1969-37744	19691103
PRAI	US 1968-773314		19681104		

AB Mixts. of the title compds. $(HSiO_{3/2})_n$ (I) were prepd. from $HSiCl_3$ or $HSi(OMe)_3$. Thus, 12.7 g $HSiCl_3$ in 150 ml C_6H_6 was added to 200 g C_6H_6,

80.3 g concd. H_2SO_4 and 60.4 g fuming sulfuric acid (15% SO_3) within 6 hr, the acid phase removed, and the C_6H_6 phase washed to neutrality with 50% H_2SO_4 and finally with H_2O. The soln. was filtered and C_6H_6 evapd. to give 97.8% resinlike I contg. 9-27% volatile I (n = 10) 4.2, I (n = 12) 43.2 I (n = 14) 36.8, and I (n = 16) 13.5 wt. %.

L2 ANSWER 1 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:231223 HCAPLUS
DN 136:333639
TI Structural, electrical, and mechanical properties development during curing of low-k hydrogen silsesquioxane films
AU Toivola, Yvete; Thurn, Jeremy; Cook, Robert F.
CS Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, 55455, USA
SO Journal of the Electrochemical Society (2002), 149(3), F9-F17
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB Changes in structure and properties of a com. low dielec. const. (low-k) silsesquioxane (SSQ) material are examd. as a function of curing temp. (375-450.degree.C). Curing results in a chem. reaction in which cage-like (**HSiO1.5**) SSQ oligomers network via -O-Si-O- linkages.
A direct consequence of the chem. and structural evolution is a change in elec. and mech. properties. A correlation is made between chem. and structural changes on curing (quantified by IR spectroscopy) and the resulting dielec. const., film stress, hardness, and modulus. In particular, IR spectroscopy was used to quantify the increased -O-Si-O- oligomer network formed as a result of increased curing temp. Film modulus and hardness, detd. by depth-sensing indentation, were shown to increase as a result of increased networking. Residual film stress, detd. by a curvature measurement technique, was detd. to be tensile with increased magnitude on increased network formation. Film dielec. const. detd. by capacitance measurements of metal dot structures increased as a result of increased network formation. Capping SSQ films with thin layers of SiNx was shown to greatly improve resistance to stress-corrosion cracking for all levels of network formation.
RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:641431 HCAPLUS
TI Synthesis of mixed layers derived from functional silicon oxide clusters on gold
AU Nicholson, Kenneth T.; Zhang, K. Z.; Banaszak Holl, Mark M.; McFeely, F. R.; Pernisz, Udo C.
CS Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109, USA
SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United States, August 26-30, 2001 (2001), PHYS-334 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69BUZP
DT Conference; Meeting Abstract
LA English
AB The synthesis of single and multiphase mixed layers of silicon oxide clusters (**HSiO1.5**)n on freshly evapd. gold surfaces is reported within this paper. The dynamic nature of an assembled H8Si8O12 cluster layer in the presence of other adsorbates in ultra-high vacuum is the major player in the displacement and exchange reactions which yield mixed layers contg. organosilicon entities with several potential functionalities. The role of at. hydrogen, a byproduct of the cluster chemisorption, in the formation of these novel mixed layers will also be discussed.

L2 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:640133 HCAPLUS
TI Scanning tunneling microscopy and spectroscopy study of a model Si/SiO2 interface: Spherosiloxane clusters on Si(100)
AU Schneider, Kevin S.; Orr, Brad G.; Banaszak Holl, Mark M.
CS Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109-1055, USA
SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United States, August 26-30, 2001 (2001), MTLS-001 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69BUZP
DT Conference; Meeting Abstract
LA English
AB Scanning tunneling microscopy (STM) and spectroscopy data for a model Si/SiO2 interface system comprised of spherosiloxane clusters ([**HSiO1.5**]n) chemisorbed to Si(100) will be presented. Information obtained from these expts. may yield a better understanding of the chem., phys., and elec. phenomena occurring in device Si/SiO-2 interfaces. Previous studies have produced two bonding models for the H8Si8O12/Si(100) model oxide interfacial system: the "monovertex" and "cracked cluster" bonding configurations. Non-local d. functional theory (NL-DFT) was used to derive electron d./electrostatic potential maps for the H8-Si8O12 monovertex and cracked cluster bonding configurations (Fig. 1A&B). STM data of the H8Si8O12/Si(100) surface (Fig. 1C) is entirely consistent with the geometrical constraints imposed from NL-DFT calcns. for the monovertex attachment model. Similar expts. for the H10Si10O15/Si(100) system will also be presented. An expected STM filled state image of a monovertex-attached H10Si10O15 cluster to Si(100) is shown in Fig. 2.

L2 ANSWER 4 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:401495 HCAPLUS
DN 133:44331
TI Preparation of hydrogen silsesquioxane resins and modified hydrogen silsesquioxane resins in high yield without using strong acids
IN Carpenter, Leslie Earl, II; Suto, Michitaka; Zank, Gregg Alan
PA Dow Corning Asia, Ltd., Japan
SO Eur. Pat. Appl., 7 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1008609	A2	20000614	EP 1999-124291	19991206
	EP 1008609	A3	20010314		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000169585	A2	20000620	JP 1998-347354	19981207
	KR 2000047964	A	20000725	KR 1999-55440	19991207
PRAI	JP 1998-347354	A	19981207		

AB Hydrogen silsesquioxane with sol. in solvents without gelling, is prepd. by hydrolysis and condensation of trichlorosilane (HSiCl3) in a two-phase system comprising water and .gtoreq.1 oxygen-contg. org. solvent selected from ketones , ethers, and esters. The silanol resin obtained is capped with R3SiO0.5 (R = Me, vinyl, H; e.g., Me3SiCl), to form a modified hydrogen silsesquioxane resin (**HSiO1.5**)x(R3SiO0.5)1-x with chem. stability.

L2 ANSWER 5 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:709120 HCAPLUS
DN 129:331201
TI Stable solutions of siloxane polymers for coating semiconductor materials
IN Leung, Roger Y.; Nakano, Tadashi
PA AlliedSignal Inc., USA
SO PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9847943	A1	19981029	WO 1998-US6165	19980330
	W: CA, CN, IL, JP, KR, RU, SG				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6015457	A	20000118	US 1998-39289	19980312
	TW 419493	B	20010121	TW 1998-87105463	19980410
PRAI	US 1997-44478P	P	19970421		
	US 1998-39289	A	19980312		

AB Poly(hydrido siloxane) copolymers and solns. of these copolymers are prepd. for coating semiconductor substrates as planarizing dielec. layers. The copolymers (**HSiO1.5**)a(HSiO(OR))b(SiO2)c, where R = a mixt. of H and C1-4-alkyl; a + b + c = 1 ; 0.5 < a < 0.99; 0.01 < b < 0.5; and 0 < c < 0.5 are prepd. from alkoxysilanes. Thus, hydrolytic polymn. of triethoxysilane in Me2CO/HNO3/H2O gave a copolymer of mol. wt. 20,000. Thus, copolymer was mixed/heated with 2,2-dimethoxypropane and Bu2O to remove H2O and alc. and the stable (>9 mo. at -15.degree.) soln. was spin coated onto silicon wafers.

L2 ANSWER 6 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:505736 HCAPLUS
DN 129:217206
TI Highly Porous Polyhedral Silsesquioxane Polymers. Synthesis and Characterization
AU Zhang, Chunxin; Babonneau, Florence; Bonhomme, Christian; Laine, Richard M.; Soles, Christopher L.; Hristov, Hristo A.; Yee, Albert F.
CS Departments of Chemistry Materials Science and Engineering and the Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI, 48109, USA
SO Journal of the American Chemical Society (1998), 120(33), 8380-8391
CODEN: JACSAT; ISSN: 0002-7863
PB American Chemical Society
DT Journal
LA English
AB Polyhedral octahydridosilsesquioxanes, [**HSiO1.5**]8 (1) and [(HSiMe2O)SiO1.5]8 (3) were hydrosilylatively copolymd. with stoichiometric amts. of the octavinylsilsesquioxanes, [vinylSiO1.5]8 (2) and [(vinylSiMe2O)SiO1.5]8 (4) in toluene using platinum divinyltetramethyldisiloxane, "Pt(dvs)", as catalyst. The degree of condensation of the resultant four copolymers ranges from 43% to 81% depending on intercube chain lengths, as detd. by solid state 13C and 29Si MAS NMR analyses, using cross-polarization (CP) techniques. The presence of residual functional groups was confirmed by diffuse reflectance IR Fourier transform spectroscopy (DRIFTS). Polymer porosities were measured using nitrogen sorption, positron annihilation lifetime spectroscopy (PALS), and small angle X-ray scattering (SAXS) methods. The combination of these three techniques allows a relatively complete description of the pore sizes and pore size distributions in these materials. The pores in the cube interiors are .apprx.0.3 nm in diam., while those between the

cubes range from 1 to 50 nm in diam. (for polymer 3 + 4). Nitrogen sorption analyses give sp. surface areas (SSAs) of 380 to 530 m2/g with "observable" pore vols. of 0.19-0.25 mL/g.

L2 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:442283 HCAPLUS
DN 129:169762
TI In situ high-pressure- and high-temperature studies of silicon suboxides via energy-dispersive x-ray diffraction
AU Friede, B.; Jansen, M.
CS Institut Anorganische Chemie, Universitaet Bonn, Bonn, D-53121, Germany
SO Zeitschrift fuer Anorganische und Allgemeine Chemie (1998), 624(7), 1159-1165
CODEN: ZAACAB; ISSN: 0044-2313
PB Johann Ambrosius Barth
DT Journal
LA German
AB The amorphous Si compds. Si2O3, H2Si2O4, **HSiO1.5**, and SiO were investigated under high-pressure- and high-temp. conditions in situ via energy-dispersive x-ray diffraction with synchrotron radiation. Except for SiO, at a pre-set pressure of 45 kbars the formation of coesite was obsd. at heating. Com. available SiO did not crystallize in any way, indicating that it seems not to consist of Si(II) oxide, but is in fact a mixt. of Si and SiO2, disproportionated on an at. scale.

L2 ANSWER 8 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:293555 HCAPLUS
DN 129:17111
TI Stable solutions of silsesquioxane or siloxane resins and silicone solvents
IN Hacker, Nigel P.; Krajewski, Todd; Lefferts, Scott; Davis, Gary
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9818850	A1	19980507	WO 1997-US19299	19971027
	W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GH, HU, ID, IL, IS, JP, KP, KR, LK, LR, LS, LT, LV, MG, MK, MN, MW, MX, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 6020410	A	20000201	US 1997-955802	19971022
	AU 9850872	A1	19980522	AU 1998-50872	19971027
	EP 935632	A1	19990818	EP 1997-913759	19971027
	EP 935632	B1	20011212		
	R: DE, FR, GB, IE				
	JP 2002514238	T2	20020514	JP 1998-520630	19971027
	TW 428016	B	20010401	TW 1997-86116080	19971029
	KR 2000052937	A	20000825	KR 1999-703809	19990429
PRAI	US 1996-29235P	P	19961029		
	US 1997-955802	A	19971022		
	WO 1997-US19299	W	19971027		

AB Storage-stable solns. of silsesquioxanes or siloxanes, for coatings of,

e.g., semiconductors, are obtained by means of a silicon-contg. solvent compn. The soln. has .gtoreq.1 polymer having a formula [(**HSiO1 .5**)xOy]n, (**HSiO1.5**)n, [(**HSiO1. 5**)xOy(RSiO1.5)z]n, [(**HSiO1.5**)x(RSiO1.5)y]n or [(**HSiO1.5**)xOy(RSiO1.5)z]n wherein x = 6-20, yr = 1-3, z = 6-20, n = 1-4,000, and each R is independently H, C1-8 alkyl or C6-12 aryl. The solvent has the formula (CH3)3SiO[Si(CH3)2]a-Si(CH3)3, (CH3CH2)SiO[Si(CH3CH2)2]a-Si(CH3CH2)3, R3SiO[SiR'2]a-SiR3, [OSi(CH3)2]b, [OSi(CH3CH2)2]b or [OSiR'2]n wherein a = 0-5, b = 3-5, and each R' is independently H or C1-8 alkyl.

L2 ANSWER 9 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:288782 HCAPLUS
DN 129:86705
TI Thin-film materials and minimum thermal conductivity
AU Lee, S. -M.; Matamis, George; Cahill, David G.
CS Department of Materials Science and Engineering, University of Illinois, Urbana, IL, 61801, USA
SO Microscale Thermophysical Engineering (1998), 2(1), 31-36
CODEN: MTENFP; ISSN: 1089-3954
PB Taylor & Francis
DT Journal
LA English
AB The theor. min. thermal cond. can be used to model heat transport in a wide variety of bulk and thin-film materials with strong at.-scale disorder. To explore the possibility of using metastable microstructures in thin-film materials to achieve significant redns. in cond., the authors present exptl. results-obtained using the 3.omega. method in the temp. range 77-400 K-on two novel systems. (1) The thermal cond. of a low-dielec.-const. "flowable oxide" (**HSiO1.5**, hydrogen silsesquioxane) is greatly reduced relative to SiO2. (2) The thermal cond. of stabilized zirconia/SiO2 multilayers is unchanged by solid-solid interfaces sepd. by nanometer length scales.

L2 ANSWER 10 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:522988 HCAPLUS
DN 125:247889
TI The monophenylhydrosilasesquioxanes PhHn-1SinO1.5n where n = 8 or 10
AU Calzaferri, Gion; Marcolli, Claudia; Imhof, Roman; Toernroos, Karl W.
CS Inst. of Inorganic and Physical Chemistry, Univ. of Berne, Bern, 3000, Switz.
SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1996), (15), 3313-3322
CODEN: JCDTBI; ISSN: 0300-9246
PB Royal Society of Chemistry
DT Journal
LA English
AB The 1st monosubstituted decasilasesquioxane, PhH9Si10O15, and the analogous PhH7Si8O12 mol. were prepd. and characterized by IR and Raman spectroscopy and x-ray crystallog. Both have crystallog. C1 symmetry, but their cages exhibit an approx. Cs, and an effective C3, symmetry, resp. in the cryst. state. The IR and Raman spectra of the two mols. are very similar and reflect the close similarity obsd. for the spectra of H8Si8O12 and H10Si10O15. They were treated as a superposition of the spectra of the siloxane cage Hn-1SinO1.5n, n = 8 or 10, the Ph substituent and the connecting moiety O3Si-C(CH)2 and assigned from spectral correlation and normal coordinate anal. The siloxane cage vibrations are best understood by correlation with those of the unsubstituted cages, indicating that distortions of the Si8O12 and Si10O15 cages caused by the substituent are

small. A comparison of the Si-C stretching force consts. indicates that Si-Cvinyl and Si-Cphenyl are of similar strength while the Si-Calkyl bond is weaker. The notion of ring-opening vibrations, introduced for (**HSiO1.5**)2n, n = 2, 3, 4, etc., is also applicable to PhH7Si8O12 and PhH9Si10O15. The Ph substituent does not influence the frequency range of four- and five-membered ring-opening vibrations, however the no. of such vibrations is increased.

L2 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:452231 HCAPLUS
DN 125:144052
TI Silsesquioxanes as Synthetic Platforms. 3. Photocurable, Liquid Epoxides as Inorganic/Organic Hybrid Precursors
AU Sellinger, Alan; Laine, Richard M.
CS Department of Materials Science and Engineering Chemistry, University of Michigan, Ann Arbor, MI, 48109-2136, USA
SO Chemistry of Materials (1996), 8(8), 1592-1593
CODEN: CMATEX; ISSN: 0897-4756
PB American Chemical Society
DT Journal
LA English
AB Platinum catalyzed hydrosilylation of allyl glycidyl ether with octahydridosilsesquioxane (**HSiO1.5**)8 and octakis(dimethylsiloxy)silsesquioxane (HMe2SiOSiO.5)8 provides access to tetra- and octaepoxy-functionalized cubic silsesquioxanes (cubes). The resulting epoxy cubes offer "masked" silica contents of up to 65 wt.%, are sol. in common solvents, and are viscous liqs. at room temp. and making them attractive for coating and nanocomposite applications. They polymerize on exposure to UV light in the presence of a catalytic photoinitiator to produce insol., hybrid nanocomposites. The epoxy cubes were characterized by NMR (1H, 13C, 29Si), TGA, FTIR, and SEC.

L2 ANSWER 12 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:350596 HCAPLUS
DN 125:60085
TI Modified hydrogen silsesquioxane resins as precursor for manufacture of ceramics
IN Zank, Gregg A.
PA Dow Corning Corp., USA
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5516867	A	19960514	US 1995-439843	19950512
	CA 2175415	AA	19961113	CA 1996-2175415	19960430
	EP 742245	A2	19961113	EP 1996-303144	19960503
	EP 742245	A3	19970827		
	R: DE, FR, GB				
	JP 08302019	A2	19961119	JP 1996-116792	19960510
PRAI	US 1995-439843		19950512		

AB Novel modified hydrogen silsesquioxane resins, of structure (**HSiO1 .5**)x(R1R2R3SiO0.5)y (R1, R2, and R3 are independently selected from H, alkyl, and aryl; x = 0.25-0.99; 0.01 < y < 0.75; and x + y = 1.0) were disclosed. The resins are prepd. by refluxing a mixt. of 1 wt. part of the precursor resin, of structure HSi(OH)x(X)yOz/2 (X is a hydrolyzable substituent, x = 0-2; 0 < y < 2; z = 1-3; x + y + z = 3), with 0.01-0.5 wt. parts water, 0.0001-0.05 wt. parts of an acid (esp. trifluoroacetic acid), and 0.1-10 wt. parts of an end-capping agent of structure (R1R2R3Si)2O (R1,R2,R3 are H, alkyl, alkenyl, or aryl). Suitable X is Cl or alkoxy; suitable R1, R2, and R3 are H or Me; preferably, the end-capping reagent are hexamethyldisiloxane and 1,1,3,3-tetramethyldisiloxane. The modified resins, which are typically prepd. by

refluxing the components at 20-150.degree. for 1-24 h in an org. solvent, have a no.-av. mol. wt. of 500-2500, and are suitable for manuf. of ceramics.

L2 ANSWER 13 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:236207 HCAPLUS
DN 124:329335
TI Highly porous interlayer dielectric for interconnect capacitance reduction
AU Jeng, Shin-Puu; Taylor, Kelly; Seha, Tom; Chang, Mi-Chang; Fattaruso, John; Hayemann, Robert H.
CS Semiconductor Process and Device Center, Texas Instruments, Inc., Dallas, TX, 75265, USA
SO Symp. VLSI Technol., Dig. Tech. Pap., 15th (1995), 61-2 Publisher: Business Center for Academic Societies Japan, Tokyo, Japan.
CODEN: 62PWAR
DT Conference
LA English
AB Hydrogen silsesquioxanes ((**HSiO1.5**)2n, n = 3-8) provide a low-d. gap fill between metals which reduces interconnect capacitance. They simplify the process integration of low dielec. materials using std. spin-on coating processes. It also greatly reduces the capacitative coupling between metal leads.

L2 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:113814 HCAPLUS
DN 124:177575
TI Silsesquioxanes as Synthetic Platforms. Thermally Curable and Photocurable Inorganic/Organic Hybrids
AU Sellinger, Alan; Laine, Richard M.
CS Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA
SO Macromolecules (1996), 29(6), 2327-30
CODEN: MAMOBX; ISSN: 0024-9297
DT Journal
LA English
AB Novel inorg./org. hybrids based on silsesquioxanes, (RSiO1.5)8 and propargyl methacrylate have been synthesized and characterized. The Pt catalyzed reaction of (**HSiO1.5**)8 and (H(CH3)2SiOSiO1.5)8 with HC.tplbond.CCH2OCOC(CH3)=CH2 occurs specifically at the propargyl site, retaining the methacrylate functionality for subsequent polymn. These single-phase hybrids are sol. in common solvents e.g.: THF, toluene, hexane and CH2Cl2. Polymn. of the methacrylate hybrids can be realized thermally and photochem. to give hard, abrasion resistant, insol. composites contg. up to 65 wt. % masked silica. The hybrids were characterized by TGA, DSC, SEC and NMR (1H, 13C and 29Si).

L2 ANSWER 15 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:6652 HCAPLUS
DN 124:88604
TI Silsesquioxanes as synthetic platforms: thermally and photo curable inorganic/organic hybrids
AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.
CS Departments of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA
SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1995), Volume Date 1995, 36(2), 282-3
CODEN: ACPPAY; ISSN: 0032-3934
DT Journal
LA English

AB Novel functionalized polyhedral silsesquioxane cubes contg. both methacrylate and epoxy groups were prepd. and characterized. The syntheses are based on the Pt-catalyzed hydrosilylation of allyl glycidyl ether, propargyl methacrylate, and propargyl acetate with **(HSiO1 .5)**8, and the epoxidn. of (CH2:CHMe2SiOSiO1.5)8 with 3-chloroperoxybenzoic acid. The reactions are high yield (>85%) and form relatively pure products as detd. by H, C-13, and Si-29 NMR, TGA, and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion,and solvent-resistant materials contg. .ltoreq.70% masked silica.

L2 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:925666 HCAPLUS
TI Silesquioxanes as synthetic platforms: Thermally and photo curable inorganic/organic hybrids
AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.
CS Macromolecular Science and Engineering Center, University Michigan, Ann Arbor, MI, 48109-2136, USA
SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 2, POLY-114 Publisher: American Chemical Society, Washington, D. C.
CODEN: 61XGAC
DT Conference; Meeting Abstract
LA English
AB Novel functionalized silsesquioxanes contg. both methacrylate and epoxy groups have been synthesized and characterized. The syntheses are based on the Pt catalyzed hydrosilylation of allylglycidylether, propargylmethacrylate, and propargylacetate with (**HSiO1. 5**)8 and (HSiMe2OSiO1.5)8, and the epoxidn. of (CH2=CHSiMe2OSiO1.5)8. The reactions are high yield (>85%), and form relatively pure products as detd. by 1H, 13C, 29Si NMR, TGA and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion, and solvent resistant materials contg. up to 70% masked silica.

L2 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:695730 HCAPLUS
DN 123:286789
TI Coupling of allyloxy and propargyloxy moieties with hydridosilanes: novel liquid crystalline functionalized silsesquioxanes
AU Sellinger, Alan; Laine, Richard M.
CS Department Materials Science Engineering, University Michigan, Ann Arbor, MI, 48109-2136, USA
SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1994), 35(2), 665-6
CODEN: ACPPAY; ISSN: 0032-3934
DT Journal
LA English
AB The synthesis and characterization of novel liq. cryst. and methacrylate-functionalized silsesquioxanes (**HSiO1.5**)8 prepd. by Pt-catalyzed coupling of 4 equiv. of 4-(4-allyloxybenzoyloxy)biphenyl or propargyl methacrylate with 1 equiv. octahydridosilsesquioxane. The low polymn. temp. for the methacrylate-functionalized silsesquioxane shows very promising utility for use in dental materials and abrasion-resistant coatings.

L2 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:313765 HCAPLUS
DN 122:87281
TI X-ray diffraction study on medium-range structure and thermal change of silica gel made from triethoxysilane by sol-gel method
AU Kamiya, Kanichi; Wada, Masanori; Izumi, Masao; Matsuoka, Jun; Nasu,

Hiroyuki
CS Faculity Engineering, Mie Univ., Mie-ken, 514, Japan
SO Bull. Inst. Chem. Res., Kyoto Univ. (1994), 72(2), 105-23
CODEN: BICRAS; ISSN: 0023-6071
DT Journal
LA English
AB Silica gel was prepd. from triethoxysilane, HSi(OC2H5)3 (HTES), by the sol-gel method. The medium-range (MR) structure was examd. on the basis of the X-ray radial distribution anal. A structure model deduced from hydrosilsesquioxane ladder polymer, (**HSiO1.5**)n, which is composed of 4-fold siloxane rings (or tetra-cyclosiloxane), well-simulated MR structure of the HTES-derived silica gel. Thermal structure change of the gel in air was traced by the IR spectrometry and X-ray diffraction anal. Above 300.degree.C, .tplbond.Si-H was oxidized to form .tplbond.Si-OH, followed by the condensation between .tplbond.Si-OH to form .tplbond.Si-O-Si.tplbond. bonds. At 300-500.degree.C, the change of MR structure such as probably the reconstructive change of 4-fold siloxane rings to 6-fold ones, which was not so abrupt as the tetraethoxysilane (TEOS)-derived silica gel, was obsd. The MR structure very similar to silica glass was not yet attained even at 1000.degree.C, while it was attained around 600.degree.C in the case of the TEOS-derived silica gel.

L2 ANSWER 19 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:639001 HCAPLUS
DN 121:239001
TI A Quantum Mechanical Investigation of Silsesquioxane Cages
AU Earley, Clarke W.
CS Department of Chemistry, University of Missouri, Kansas City, MO, 64110, USA
SO J. Phys. Chem. (1994), 98(35), 8693-8
CODEN: JPCHAX; ISSN: 0022-3654
DT Journal
LA English
AB Electronic structure calcns. were performed on a series of mol. silsesquioxane cages [**HSiO1.5**]n (n = 4, 6, 8,10, and 12) using ab initio quantum mech. methods to examine factors that det. the relatively stability of different sizes of silicon oxide cages. While previous ab initio studies were reported on the relative stability of mol. silicate rings, silsesquioxane cages are expected to be better models for solid-state silicates due to their rigidity and more similar mol. environment. To det. the relative stability of silicate cages, calcd. total energies at optimized geometries (6-31G(d)//6-31G(d)) for a series of silsesquioxane cages were compared. Consistent with both exptl. observations and prior theor. investigations, mols. contg. (Si-O-)3 rings were calcd. to be significantly less stable than mols. contg. only larger rings. Much smaller differences in relative stability were calcd. to occur between larger cages that do not contain this type of ring.

L2 ANSWER 20 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:638627 HCAPLUS
DN 117:238627
TI Characterization of silicon sesquioxide and thermal behavior of hydrosilsesquioxane gels
AU Belot, Valerie; Corriu, Robert; Leclercq, Dominique; Lefevre, Patricia; Mutin, P. Hubert; Vioux, Andre; Flanck, Anne Marie
CS Rhone-Poulenc, Montpellier, 34059, Fr.
SO Chem. Process. Adv. Mater. (1992), 143-58. Editor(s): Hench, Larry L.; West, Jon K. Publisher: Wiley, New York, N. Y.

CODEN: 58HBAN
DT Conference
LA English
AB The thermal evolution of **HSiO1.5** gels under Ar was studied by TGA/mass spectrometry, x-ray absorption near edge structure, NMR, ESR, and comparison of heat-treated **HSiO1.5** with an authentic Si2O3 sample obtained by hydrolysis of Si2Cl6.

L2 ANSWER 21 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:451145 HCAPLUS
DN 117:51145
TI Size composition for paper
IN Makievskaya, S. I.; Gorskii, G. M.; Gushchina, N. V.; Shkol'nik, O. V.; Zverev, V. V.
PA Belorussian Technological Institute, USSR; State Scientific-Research Institute of Chemistry and Technology of Heteroorganic Compounds
SO U.S.S.R.
From: Otkrytiya, Izobret. 1991, (29), 127.
CODEN: URXXAF
DT Patent
LA Russian
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SU 1668516	A1	19910807	SU 1989-4705605	19890615

AB A size compn., conferring increased stability on paper after treatment and drying, comprises the siloxanes [(**HSiO1.5**)(HMeSiO)10(Me2SiO)10(Me3SiO0.5)2]2 0.5-2.5 wt.% and H2O 97.5-99.5 wt.%.

L2 ANSWER 22 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:74182 HCAPLUS
DN 114:74182
TI Thermal reactivity of hydrogenosilsesquioxane gels
AU Belot, V.; Corriu, R.; Leclercq, D.; Mutin, P. H.; Vioux, A.
CS Univ. Montpellier II, Montpellier, F34095, Fr.
SO Chem. Mater. (1991), 3(1), 127-31
CODEN: CMATEX; ISSN: 0897-4756
DT Journal
LA English
AB The thermal reactivity under Ar, air, and NH3 of the hydrogenosilsesquioxane gels (**HSIO1.5**), prepd. from trichloro- or trialkoxysilane, was investigated by using a thermogravimetric analyzer interfaced with a mass spectrometer. Under Ar these gels thermally decomp. by 2 different mechanisms: (1) the cleavage of Si-H bonds gives rise to a loss of H; (2) a redistribution reaction of Si-H and Si-O bonds induces the escape of SiH4. This second reaction, possibly catalyzed by residual hydroxyl groups, involves the formation of SiH2 groups as evidenced by IR and solid-state NMR spectroscopies. It accounts for the thermograms obtained under air and NH3.

L2 ANSWER 23 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1990:576936 HCAPLUS
DN 113:176936
TI Redistribution reactions in silsesquioxane gels
AU Belot, V.; Corriu, R. J. P.; Leclercq, D.; Mutin, P. H.; Vioux, A.
CS Univ. Sci. Tech. Languedoc, Montpellier, 34060, Fr.
SO J. Mater. Sci. Lett. (1990), 9(9), 1052-4
CODEN: JMSLD5; ISSN: 0261-8028
DT Journal

LA English
AB Thermal redistribution of Si-H and Si-O bonds or Si-C and Si-O bonds in the solid state in **HSiO1.5** and MeSiO1.5 gels were examd. The gels were prepd. by hydrolysis of the corresponding chlorosilanes in di-Et ether with an excess of water, then washed and dried upon vacuum at 150.degree. for 24 h. The thermal behavior of the gels was followed by TG (Netzsch STA409) and a quadrupole mass spectrometer (Kenos KSM200) which enables qual. continuous anal. of the evolved gases. Gels were heated at 5 or 10.degree./min under flowing Ar (50 mL/min). NMR spectra were recorded with a Brucker AM30 FTNMR spectrometer at 59.6 MHz resonance frequency for Si-29. Magic-angle spinning was used (.apprx.4.1 kHz spinning frequency) combined with a cross-polarization pulse sequence (5 ms contact time under Hartmann-Hahn conditions and 60 s repetition time).

L2 ANSWER 24 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1989:214551 HCAPLUS
DN 110:214551
TI Injection-molded silicone rubber compositions with low compression set
IN Okami, Takehide; Fujiki, Hironao; Hasebe, Nobuyuki
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63202659	A2	19880822	JP 1987-34907	19870218
	JP 05000417	B4	19930105		

AB The compns., useful for moldings with low compression set without post curing, comprise 100 parts vinyl group-contg. siloxanes (A), 0-300 parts fillers, catalytic amts. of Pt compds., and HR2SiO0.5-terminated hydrogen siloxanes (R = Me, Et, Pr) having 0.6-3.0 Si-bonded H (based on vinyl groups of A) and no **HSiO1.5** units. A compn. of dimethylvinylsilyl-terminated polydimethylvinylsiloxane 100, methylsiloxane-treated silica 30, and cyclic methylhydrogen polysiloxane 1.36 parts and 5 ppm H2PtCl6 was kneaded and injection-molded at 170.degree. for 60 s to give a product showing compression set 9.2%.

L2 ANSWER 25 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:168547 HCAPLUS
DN 108:168547
TI Process for manufacture of siloxane resins having 0.1-30% monovalent units having Si-H groups
IN Butler, Derek William
PA Dow Corning Ltd., UK
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 251435	A1	19880107	EP 1987-303458	19870421
	EP 251435	B1	19900912		
	R: BE, DE, FR, GB				
	US 4774310	A	19880927	US 1987-61759	19870615
	CA 1285095	A1	19910618	CA 1987-540535	19870625

JP 63008421	A2	19880114	JP 1987-157973	19870626
JP 05062129	B4	19930907		

PRAI GB 1986-15862 19860628

AB A method for making siloxane resins essentially consisting of tetravalent SiO2 units and monovalent R3SiO0.5 and HaR3-aSiO0.5 (R = C<9 alkyl, C<9 aryl; a = 1,2) units comprises reacting a siloxane resin consisting of R3SiO0.5 units and SiO2 units with (HaR3-aSi)2O in the presence of an acidic catalyst. Although these resins have SiH groups they differ from MQ resins [siloxane resins consisting of triorganosiloxane units (R3SiO0.5) and SiO2 units] in that they have a significant content of divalent (HRSiO) and/or trivalent (**HSiO1.5**) units. A MQ resin (I) was prepd. by reacting 1-hexamethyldisiloxane 129.6, HCl 40, abs. EtOH 30, and H2O 60 g at 70-80.degree., and adding 208.3 g Si(OEt)4 dropwise over 60 min. The temp. was increased and maintained at 75-80.degree. for .apprx.30 min, and the product was sepd. using H2O and PhMe. The org. phase was neutralized, dried, filtered, and the solvent removed under vacuum at 130.degree. producing 172.5 g I with mol. wt. 881, viscosity 554 mm2/s, and 1.9% residual SiOEt. A N-filled reactor was charged with 125.8 g I, 17.4 g (Me2HSi)2O was added, the mixt. was heated with stirring to 33.degree. and 0.72 g F3CSO3H was added with 0.07 g H2O. The mixt. was heated to .apprx.80.degree. for 6 h, cooled to 62.degree., the acid catalyst pptd. by addn. of DMF, the mixt. maintained at 80.degree. for 1 h, cooled to room temp., and 10 g NaHCO3 was added. The product was filtered, and stripped at 128.degree./10 mmHg, producing 77.9 g of resin, anal. of which showed 6.18% SiH.

L2 ANSWER 26 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1987:515635 HCAPLUS
DN 107:115635
TI A new route to trimethylsilylated spherosilicates. Synthesis and structure of [Si12O18](OSiMe3)12, D3h-[Si14O21](OSiMe3)14, and C2v-[Si14O21](OSiMe3)14
AU Agaskar, P. A.; Day, V. W.; Klemperer, W. G.
CS Dep. Chem., Univ. Illinois, Urbana, IL, 61801, USA
SO J. Am. Chem. Soc. (1987), 109(18), 5554-6
CODEN: JACSAT; ISSN: 0002-7863
DT Journal
LA English
OS CASREACT 107:115635
AB Three hydridosiloxanes were isolated for the first time from a mixt. of species (**HSiO1.5**)n prepd. by a method previously described by Frye and Collins: [Si12O18]H12 (I), D3h-[Si14O21]H14 (II), and C2v-[Si14O21]H14 (III). The corresponding trimethylsiloxy compds. [Si12O18](OSiMe3)12 (IV), D3h-[Si14O21](OSiMe3)14 (V), and C2v-[Si14O21](OSiMe3)14 (VI) were prepd. by treatment of I-III with Me3NOSiMe3Cl. The structures of II and III were detd. using single crystal x-ray diffraction and NMR techniques. Compds. I and IV have D2d polyhedral frameworks involving four four-Si siloxane rings and four five-Si siloxane rings, i.e., [44, 54] cages. Compds. II and V have polyhedral D3h-[43, 56] frameworks, while III and VI have C2v-[44, 54, 61] frameworks.

L2 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1978:121372 HCAPLUS
DN 88:121372
TI Diorganomonochlorosilanes
IN Takamisawa, Minoru; Hayashi, Takayoshi; Umemura, Mitsuo
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Japan., 4 pp.

CODEN: JAXXAD
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 52031854	B4	19770817	JP 1970-80642	19700914

AB Diorganodichlorosilanes were treated with polysiloxanes having .gtoreq.30 mol% MeHSiO or **HSiO1.5** unit in a mol in the presence of BCl3, (Me2N)3PO, or Bu4NCl to give diorganomonosilanes. Thus, 387 g Me2SiCl2, 200 g Me3SiO(SiHMeO)10SiMe3, and 18 g (Me2N)3PO were refluxed 4 h to give 68.3% Me2SiHCl.

L2 ANSWER 28 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1973:125375 HCAPLUS
DN 78:125375
TI Organopolysiloxanes
IN Flannigan, William Tait
PA Imperial Chemical Industries Ltd.
SO Ger. Offen., 13 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2236971	A1	19730215	DE 1972-2236971	19720727
	GB 1384695	A	19750219	GB 1971-35971	19720614
	BE 786656	A1	19730124	BE 1972-120196	19720724
	NL 7210431	A	19730201	NL 1972-10431	19720728
	FR 2148078	A1	19730316	FR 1972-27323	19720728
	JP 48028600	A2	19730416	JP 1972-76851	19720731
PRAI	GB 1971-35971		19710730		

AB Organopolysiloxanes, useful in paper manuf., were prepd. They contained R3SiO0.5 and SiO2 units, where R is a univalent hydrocarbon group, and also RHSiO and (or) **HSiO1.5**. The ratio of R, R3SiO0.5, and RHSiO and (or) **HSiO1.5** to SiO2 was 0.6-1.5:1, the ratio of R3SiO0.5 to RHSiO and (or) **HSiO1.5** was 1-50:1, and OH bound to Si was .leq.1 wt. %. Thus, a mixt. of 339 parts trimethylchlorosilane (I) [75-77-4] and 24.2 parts methyldichlorosilane [75-54-7] in 250.8 parts xylene was added to a SiO2 hydrosol (prepd. from Na silicate, water, and HCl in isopropyl alc.). A mixt. was refluxed for 2 hr at 80-5.deg., cooled to 60-70.deg., 500 parts xylene added, the phases allowed to sep., the xylene phase contg. the resin distilled to remove water, isopropyl alc., and some xylene, to give a 30% polymer soln. in xylene. I (172 parts) was added to 1000 parts of the 30% resin soln. and the mixt. was refluxed for 3 hr, cooled to 60-70.deg. distilled at 135-40.deg. to remove water and unwanted disiloxanes to give a 30% product soln. in xylene.

L2 ANSWER 29 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1972:37004 HCAPLUS
DN 76:37004
TI Concretes of increased stability containing additives of organosilicon polymers
AU Batrakov, V. G.
CS USSR
SO Beton Zhelezobeton (1971), (10), 19-22
CODEN: BTZBA2

DT Journal
LA Russian
AB Lab. and outdoor tests were made on the life of concrete and reinforced concrete structures in cyclic freezing, wetting, and drying, capillary suction and evapn. of salt solns. Synthesized sea water with 34 g salts/l. was used. Organosilicon liq.-like polyhydroxiloxane and Na siliconates increase the life and the freeze resistance of normally hardened concretes independent of their compn. and type of binder. This is esp. true for cast concrete made of highly mobile mixes used for filling seams in reinforced concrete parts. The highest freeze and corrosion resistance is obtained with the siloxane GKZh-94. In water-satd. concrete samples with various surfactants at +20 to -60.degree. the least relative expansion is obsd. in concretes with nonorganized structure. The effect of the siliconate GKZh-10 (0.1%) and sulfite waste liquor (0.02%) is somewhat less. Various types of cement can be obtained by adding sesquisiloxanes during grinding: hydrophobic ones by adding 0.15-0.25% sesquisiloxanes RSiO1.5 (R=Me, Et, Ph), hydrophobic-gas-evolving ones by adding 0.1% RSiO1.5HSiO1.5, and gas-evolving ones by adding 0.1% **HSiO1.5**. Additives of the RSiO1.5HSiO1.5 type show the best freeze resistance. The life increase of concrete is due to the formation of a fine-porous structure with rupture of the Si-H bond.

L2 ANSWER 30 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1969:414148 HCAPLUS
DN 71:14148
TI Enhancing the repellency of fibrous materials with fluoroalkoxyalkylsilanes or siloxanes
IN Pittman, Allen G.; Wasley, William L.
PA United States Dept. of Agriculture
SO U.S., 11 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3441431	A	19690429	US 1967-641108	19670525

AB Fluoroisopropyl allyl (or vinyl) ethers (I; X, X' = F or Cl; n = 0-1) are treated with silanes (contg. Si-H bonds) in the presence of a Pt-catalyst to yield fluoroalkoxyalkylsilanes (II; X, X' = F or Cl; R, Y = F, Cl, alkoxy group, or aryl group; m = 2-3; n = 1-2), which are useful water- and oil-repellents for cotton and wool fabrics. Thus, 15.3 g. KF dispersed in 90 ml. diglyme was cooled to -40.degree., 44 g. hexafluoroacetone was added, the mixt. was allowed to warm to room temp., 32 g. allyl bromide was added, and the mixt. was heated 10 hrs. at 80-90.degree. to yield 68% hep-tafluoroisopropyl allyl ether (III) (I; X, X' = F; n = 1), b. 61.degree.. I (X, X', n, b.p. given) similarly prepd. were: Cl, Cl, 1, 130.degree.; F, Cl, 1, 97.degree.; F, F, 0, 29.degree.; Cl, Cl, 0, 81.degree., nD23 1.3579; and F, Cl, O, 53-5.degree.. A mixt. of 0.06 mole III, 0.06 mole SiHCl3, and 0.2 ml. 0.14M H2PtCl6.6H2O in iso-PrOH was heated in a sealed container for 6 hrs. at 90.degree. to yield 85% 3-(heptafluoroisopropoxy)propyl-trichlorosilane (IV) (II; X, X' = F; m = 3; n = 1; Y + R = Cl3), b0.5 39.degree.. Other II similarly prepd. are tabulated. Wool and cotton fabrics, which were immersed for 10 min. in 1:1 IV-toluene soln. at 80.degree., removed, rinsed with acetone, dried, and cured for 10 min. at 150.degree., had oil repellency rating (3M test) 80 and 90, resp., and both had water repellency rating (AATC spray test) 100. Similar, but untreated, fabrics had no repellency by these

tests. IV (20 ml.) was hydrolytically polymd. by mixing with 600 ml. H2O with vigorous stirring for 20 min. The polymer in 50 ml. C2Cl3F3 was H2O-washed, dried, and heated for 15 hrs. at 140-50.degree. to yield a polysiloxane (VIII) that had the repeating structure [(CF3)2CFO(CH2)3SiO]1.5. V, VI, and VII were similarly homopolymd. IV-SiHCl3 copolymers (IX), with repeating structure [(CF3)2CFO(CH2)3SiO1.52.4[**HSiO1.5**], were also prepd. by hydrolytic copolymn. Both VIII and IX gave good oil and water resistance to cotton and wool fabrics. V was similarly copolymd. with MeCl2SiH.

L2 ANSWER 31 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1966:98945 HCAPLUS
DN 64:98945
OREF 64:18605e-f
TI Investigation of the chemical properties of stain films on silicon by means of infrared spectroscopy
AU Beckmann, K. H.
CS Philips Zentrallaboratorium G.m.b.H., Hamburg, Germany
SO Surface Sci. (1965), 3(4), 314-332
DT Journal
LA English
AB From the study of adsorption peaks and intensity of adsorption for ir transmission spectra on stain films electrochem. produced on p-type Si in concd. HF it is concluded that these films consist chiefly of Si hydrides. The overall compn. of the film produced by immersion of Si samples in 0.1N HNO3 in concd. HF varies between H2SiO3 and **HSiO1 .5**; such variation in compn. was independent of type and magnitude of the cond. of the samples.

L2 ANSWER 32 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1962:28898 HCAPLUS
DN 56:28898
OREF 56:5479a-b
TI Crystal structure of (**HSiO1.5**)8
AU Larsson, Kare
SO Arkiv Kemi (1960), 16, 215-19
DT Journal
LA Unavailable
AB (**HSiO1.5**)8 is hexagonal, a 9.131 .+-. 0.01 and c 15.37 .+-. 0.015 A., Z = 3, space group is R.hivin.3. The structure resembles that of (MeSiO1.5)8 but the mol. packing is different. The effective intermol. attraction is larger in (MeSiO1.5)8 than in (**HSiO1. 5**)8.

L2 ANSWER 33 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1961:37655 HCAPLUS
DN 55:37655
OREF 55:7272a-d
TI Silicones. L. Methylsiloxanes with Si-H bonds
AU Muller, Rich.; Kohne, R.; Sliwinski, S.
CS Inst. silikon- und Fluorkarbonchem., Radebeul-Dresden, Germany
SO J. prakt. Chem. (1960), 11, 336-40
DT Journal
LA Unavailable
AB CA 54, 4436i, 25734a. Me siloxanes with Si-H bonds were made by cohydrolysis, cocondensation, or an equilibration process (siloxane, starting materials, b.p., m.p., d20, n20D and viscosity v20 given): Me3SiOSiHMe2, MeHSiCl2 (I) + Me3SiCl, 85.7.degree., -, 0.758, 1.3789,

0.53; (Me2HSiO)4Si, Me2HSiCl (II) + SiCl4, 189.degree., -, 0.885, 1.3869, 1.35; (Me2HSiO0.5)6(SiO2)2, II + SiCl4, 261.degree., -, 0.9298, 1.3934, -; (Me2HSiO)3SiMe, II + MeSiCl3, 164.degree., -155.degree., 0.8613, 1.3852, -; (Me2HSiO0.5)(MeSiO1.5)2, II + MeSiCl3, 225.degree., -140.degree., 0.9011, 1.3908, 1.59; (Me2HSiO)3SiH, II + HSiCl3, 155.degree., -, 0.8553, 1.3813, -; (Me2HSiO0.5)4(**HSiO1.5**)2, II + HSiCl3, 208.degree., -, -, 1.3867, -; (Me2HSiO0.5)2(MeHSiO), I + II, 119.degree., -, 0.825, 1.3798, 0.60; (Me2HSiO0.5)2(MeHSiO)2, I + II, 157.degree., -, 0.867, 1.3831, 0.82; (Me2HSiO0.5)2(MeHSiO)3, I + II, 188.degree., -, 0.884, 1.3859, 0.93; (MeH2Si)2O, MeH2SiCl (III), 34.5.degree., -, 0.7487, 1.3590, -; (MeH2SiO0.5)2(MeHSiO), I + III, 90.degree., -, 0.8376, 1.3761, -; (MeH2SiO)4Si, III + SiCl4, 159.5.degree., -, 0.901, 1.3833, -.

L2 ANSWER 34 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1959:70626 HCAPLUS
DN 53:70626
OREF 53:12785e
TI Structure of powdery dioxodisiloxane
AU Becherer, Gerhard; During, Ottmar
CS Martin Luther Univ., Halle-Wittenberg, Germany
SO Chem. Tech. (Berlin) (1958), 10, 660-1
DT Journal
LA Unavailable
AB The structure of the title compd., (**HSiO1.5**)x, was detd. by Fourier analysis of the Debye-Scherrer diagram.

L2 ANSWER 35 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1959:49843 HCAPLUS
DN 53:49843
OREF 53:8902h-i,8903a
TI Image-transfer-receiving layers
IN Gray, Russell H.
PA E. I. du Pont de Nemours & Co.
SO Continuation-in-part of U.S. 2,694,637 (C.A. 49, 2919b)
DT Patent
LA Unavailable
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2878121		19590317	US	

AB A receiving layer for use in an inversion-transfer process is prepd. by coating a support with a dispersion in a water-permeable colloid of finely divided inert solid particles which are coated with a compd. contg. at least one SiH group. A more dense image is formed than when uncoated particles, e.g. SiO2, are used because the SiH groups cause reduction of the Ag-ion complexes to Ag. Thus, 4 g. SiO2 particles having an av. diam. of 0.015 .mu. were coated with trichlorosilane. This was hydrolyzed to form a coating of (**HSiO1.5**)n in which n is 1 or more and the coating constituted 15-20% of the total wt. The particles are dispersed in 1l. of a 5% aq. gelatin soln. and coated on paper.

L2 ANSWER 36 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1958:108827 HCAPLUS
DN 52:108827
OREF 52:19238c-e
TI Polysiloxanes
IN Wagner, Geo. H.; Erickson, Charles E.
PA Union Carbide Corp.
DT Patent

LA Unavailable
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2844435		19580722	US	

AB Anhyd. condensation of certain substituted silanes to form polysiloxanes is accomplished by heating a substituted silane of the type H(RO)Si(Y)Cl, where R is an alkyl group and Y is Cl or an alkoxy group, in the presence of AlCl3 or BCl3. EtCl (and possibly also Et2O) is evolved and a condensed polysiloxane is formed. For example, 100 cc. HSi(OEt)2Cl was added to 0.1 g. AlCl3 and the mixt. refluxed for 2 hrs. EtCl and Et2O were evolved, leaving a solid corresponding to a polymer of **HSiO1**. 5. It is believed that org. groups and H atoms remain bonded to the Si atoms during the reaction. Continuation-in-part of U.S. 2,731,485 (C.A. 50, 8247g).

L2 ANSWER 37 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1956:59456 HCAPLUS
DN 50:59456
OREF 50:11152b-d
TI Mica form of the silicon oxide hydride [**HSiO1.5**]x
AU Wiberg, Egon; Simmler, Walter
CS Univ. Munich, Germany
SO Z. anorg. u. allgem. Chem. (1956), 283, 401-13
DT Journal
LA Unavailable
AB cf. C.A. 50, 10588e. In C6H6 the reaction of HSiCl3 with H2O in a 1:1.5 ratio yields a white ppt. of **HSiO1.5**, whereas in Et2O a clear soln. results. Colorless, transparent, mica-like crystals of **HSiO1.5** are formed by removing the Et2O and HCl at -40.degree. in vacuo. In this form **HSiO1.5** is stable in air and relatively inert. It decomp. thermally by the stepwise loss of H and changes color from yellow to orange to golden brown. This change is a polymerization process involving the formation of Si-Si bonds which converts the layer structure of **HSiO1.5** to a 3-dimensional polymer Si2O3. The hydrolysis is a stepwise process with HCl splitting out between partially hydrolyzed HSiCl3 mols. to form rings, then chains, and finally sheets. The effect of replacing HSiCl3 with RSiCl3 is reviewed.

L2 ANSWER 38 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1952:2479 HCAPLUS
DN 46:2479
OREF 46:422b-f
TI Silicoorganic compounds. XII. The action of certain aliphatic alcohols on trialkoxysilanes
AU Reilly, Albert F.; Post, Howard W.
CS Univ. of Buffalo, Buffalo, NY
SO J. Org. Chem. (1951), 16, 383-6
DT Journal
LA Unavailable
AB cf. C.A. 45, 5644b. Refluxing 38 g. (EtO)3SiH (I) in 50 cc. anhyd. ether with 14 cc. PrOH 10 hrs. and fractionally distg. the mixt. give 17% (EtO)2(PrO)SiH, b750 140-5.degree., nD25 1.3817, d425 0.8811, mol. refraction (MR) 46.92. With 28 cc. PrOH, 16% EtO(PrO)2SiH, b745 162-5.degree., nD25 1.3878, d425 0.8804, M R 51.34, is formed. I (1 mol.) and 1 mol. BuOH give 14% EtO(BuO)2SiH, b742 188-95.degree., nD25 1.3980, d425 0.8830, M R 60.09. I and AmOH (1:1) give 23% (EtO)2(AmO)SiH, b747 153-5.degree., nD25 1.3858, d425 0.8807, M R 55.19. (PrO)3SiH (II) and

BuOH (1:1) give 23% (PrO)2(BuO)SiH, b744 210-12.degree., nD25 1.3987, d425 0.8794, M R 60.86; with a 1:2 ratio, 30% (BuO)2(PrO)SiH, b745 215-17.degree., nD25 1.4025, d425 0.8695, M R 65.60, is formed. II and AmOH (1:1) give (PrO)2(AmO)SiH, b741 211-18.degree., nD25 1.4025, d425 0.8724, M R 65.32; with a 1:2 ratio, 20% (AmO)2(PrO)SiH, b748 235-40.degree., nD25 1.4100, d425 0.8742, M R 74.40, is formed. (BuO)3SiH (III) and AmOH (1:1) give 16% AmO(BuO)2SiH, b751 255-60.degree., nD25 1.4127, d425 0.8739, M R 74.34; with a 1:2 ratio, 13% (AmO)2(PrO)2Si, b7 146-9.degree., nD25 1.4169, d425 0.8922, M R 94.34, is formed. Refluxing 100 g. I in 100 cc. ether 24 hrs. with 5 cc. H2O gives 23% [(EtO)2SiH]2O, b25 94-7.degree., nD25 1.3864, d425 0.9412, M R 62.54. In the same way II gives 15% [(PrO)2SiH]2O, b13 131-3.degree., nD25 1.4024, d425 0.9591, M R 78.55; III gives 20% [(BuO)2SiH]2O, b6 146-50.degree., nD25 1.4104, d425 0.9151, M R 99.19, in addn. to some (BuO)5Si3O2, b7 155-60.degree., nD25 1.4110, d425 0.9276, M R 129.48, and some (BuO)6Si4O3, b10 175-9.degree., nD25 1.4131, d425 0.9562, M R 157.02. Similar treatment of (AmO)3SiH gives a mixt. of polymeric substances assumed to exist in various stages of hydrolysis, probably as far as (**HSiO1**.5)x.